

GC864-DUAL Product Description

80300ST10033a Rev. 0 - 20/06/07



Telit GC864-DUAL Product Description
80300ST10033a Rev. 0 - 20/06/07

This document is relating to the following products:



GC864-DUAL

3990250692



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1 Overview

The **Telit GC864-DUAL module** is small, lightweight, low power consumption and RoHS compliant device that allow digital communication services wherever a GSM 900 or DCS 1800 network is present.

Moreover the **GC864-DUAL** follows the Telit's Unified Form Factor policy that protects customer's investment by giving you the possibility to change used cellular technologies, certifications or band width with the simple plug-and-play switch of your **GC864-DUAL** with other wireless modules from Telit's road map that have the same physical form factor such as GC864-QUAD, GC864-PY, CC864-DUAL, UC864-E, UC864-G.

The **GC864-DUAL** is provided with a 80 pin Molex board to board connector and a 50 Ohm Murata RF connector and includes features like GPRS Class 10, Voice, Circuit Switched Data transfer, Fax, Phonebook and SMS support, 'EASY GPRS' embedded TCP/IP stack and pads for SIM holder.

The **GC864-DUAL** is specifically designed and developed by **Telit** for OEM usage and dedicated to portable data, voice and telemetric applications such as:

- **Telemetry and Telecontrol (SCADA applications)**
- **Security systems**
- **Automated Meter Reading (AMR)**
- **Vending machines**
- **POS terminals**
- **PDA's and Mobile Computing**
- **Phones and Payphones**
- **Automotive and Fleet Management applications**
- **Return channel for digital broadcasting**

The following functionalities are supported:

- **EASY GPRS (AT driven embedded TCP/IP protocol stack)**
- **EASY SCAN (full GSM frequency scanning)**
- **JAMMING DETECT & REPORT (detect the presence of disturbing devices)**

From the interface point of view, the **GC864-DUAL** provides the following:

- **Full RS232 UART, CMOS level (ASC0) interface for AT commands:**
 - Autobauding from 2.4 up to 57.6 Kbps
 - Fixed baud rate up to 115.2 Kbps
- **Two wires RS232, CMOS level (ASC1) for PYTHON debug:**
- **Pads for SIM card holder**



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- 22 x GPIO ports (max)
- 3 x A/D converters
- 1 x D/A converter
- 1 x buzzer output (as GPIO alternate function)
- 1 x vibrator motor driver output (as GPIO alternate function)
- 1 x Status led control output (as GPIO alternate function)

In order to meet the competitive OEM and vertical market stringent requirements, Telit supports its customers with a dedicated Support Policy with:

- **Telit Evaluation Kit EVK2** to help you develop your application;
- A Website with all updated information available;
- an high level specialist technical support to assist you in your development;

For more updated information concerning product Roadmap and availability, technical characteristics, commercial and other issues, please check on the Telit website www.telit.com > Products > Modules.

NOTE: Some of the performances of the **Telit module** depend on SW version installed on the module itself.

The **Telit modules** SW group is continuously working in order to add new features and improve the overall performances.

The **Telit modules** are easily upgradeable by the developer using the **Telit** Flash Programmer.

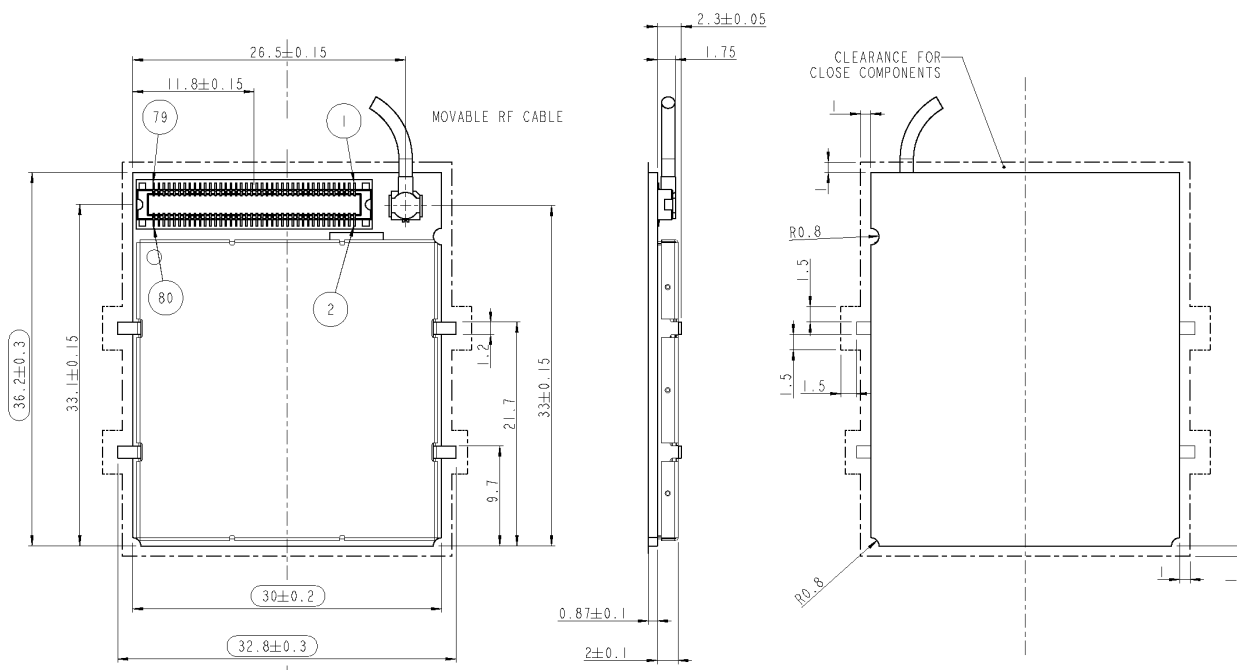


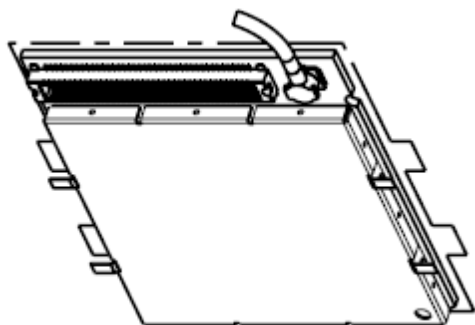
2 General Product Description

2.1 Dimensions

The **Telit GC864-DUAL module** overall dimensions are:

- **Length:** 36.2 mm
- **Width:** 30 mm
- **Thickness:** 3.2 mm





2.2 Weight

weight	
GC864-DUAL	6,1 gr

2.3 Environmental requirements

The [Telit GC864-DUAL](#) module is compliant with the applicable ETSI reference documentation GSM 05.05 Release1998.

2.3.1 Temperature range

	GC864-DUAL
Temperature in normal operating conditions	-10°C ÷ +55°C
Temperature in extreme operating conditions*	-30°C ÷ +80°C
Temperature in not functional conditions	-40°C ÷ +85°C

* Temperature exceeding the range of normal operating conditions can affect the sensitivity, the performance and the MTBF of the module.



2.3.2 Vibration Test (non functional)

- 10 ÷ 12Hz ASD = 1.92m²/s³
- 12 ÷ 150Hz -3dB/oct

2.3.3 RoHS compliance

As a part of Telit corporate policy regarding environmental protection, the **GC864-DUAL** complies with the RoHS (Restriction of Hazardous Substances) directive of the European Union (EU Directive 2002/95/EG).

2.4 Operating Frequency

The operating frequencies in GSM, DCS, PCS modes are conform to the GSM specifications.

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels (ARFC)	TX - RX offset
E-GSM-900	890.0 - 914.8	935.0 - 959.8	0 – 124	45 MHz
	880.2 - 889.8	925.2 - 934.8	975 - 1023	45 MHz
DCS-1800	1710.2 - 1784.8	1805.2 - 1879.8	512 – 885	95 MHz

2.5 Transmitter output power

GSM-900

The **Telit GC864-DUAL** transceiver module in GSM-900 operating mode is **class 4** in accordance with the specifications which determine the nominal 2W peak RF power (+33dBm) on 50 Ohm.

DCS-1800

The **Telit GC864-DUAL** transceiver module in DCS-1800 operating mode is **class 1** in accordance with the specifications which determine the nominal 1W peak RF power (+30dBm) on 50 Ohm.

2.6 Reference sensitivity

GSM-900

The sensitivity of the **Telit GC864-DUAL** module according to the specifications for the class 4 GSM 900 portable terminals is **-107 dBm** typical in normal operating conditions.



DCS-1800

The sensitivity of the [Telit GC864-DUAL](#) module according to the specifications for the class 1 portable terminals DCS-1800 is **-106 dBm** typical in normal operating conditions.

2.7 Antenna

The antenna that the customer chooses to use should fulfill the following requirements:

Frequency range	Depending by frequency band(s) provided by the network operator, the customer shall use the most suitable antenna for that/those band(s)
Bandwidth	80 MHz in EGSM 900, 170 MHz in DCS

For further information please refer to the GC864-DUAL Hardware User Guide.

2.7.1 GC864 Antenna connector

The [GC864-DUAL](#) module is equipped with a 50 Ohm RF connector from Murata, GSC type P/N **MM9329-2700B**. The suitable counterpart is Murata **MXTK92** Type or **MXTK88** Type.

Moreover, the [GC864-DUAL](#) has the antenna pads on the back side of the PCB. This allows the manual soldering of the coaxial cable directly on the back side of the PCB. However, the soldering is not an advisable solution for a reliable connection of the antenna.

2.8 Supply voltage

The external power supply must be connected to VBATT signal and must fulfill the following requirements:

Nominal operating voltage	3.8 V
Operating voltage range	3.4 V – 4.2 V

NOTE: Operating voltage range must never be exceeded; care must be taken in order to fulfill min/max voltage requirements.



2.9 Power consumption

The typical current consumption of the **Telit GC864-DUAL** is:

Power off current (typical)	< 26 μ A;
Stand-by current (GSM Idle)	< 22 mA (< 4 mA using command AT+CFUN=5)
Operating current in voice channel	<200 mA @ worst network conditions
Operating current in GPRS class 10	< 370 mA @ worst network conditions

2.10 User Interface

The user interface is managed by AT commands specified on the ITU-T V.250, GSM 07.07 and 07.05 specifications.

2.10.1 Speech Coding

The **GC864-DUAL** voice codec support the following rates:

- Half Rate
- Full rate
- Enhanced Full Rate
- Adaptive Multi Rate

2.10.2 SIM Reader

The **GC864-DUAL** provides all the necessary lines related to the SIM connectivity on its board-to-board connector. The supported SIM is Phase 2 GSM11.14 - 3V. In case of a 5V SIM operation an external level translator has to be added.

The **GC864-DUAL** is also provided by on board pads for a SIM holder. The P/Ns of the supported SIM holders are:

- Amphenol **C707 10M006 5222**
- ITT Cannon **CCMO3-3013 R102**



2.10.3 SMS

The **GC864-DUAL** support the following SMS types:

- Mobile Terminated (MT) class 0 – 3 with signaling of new incoming SMS, SIM full, SMS read
- Mobile Originated class 0 – 3 with writing, memorize in SIM and sending
- Cell Broadcast compatible with CB DRX with signaling of new incoming SMS.

2.10.4 Real Time Clock and Alarm

The **Telit GC864-DUAL** support the Real Time Clock and Alarm functions through AT commands, furthermore an alarm output pin (GPIO6) can be configured to indicate the alarm with a hardware line output.

Furthermore the Voltage Output of the RTC power supply is provided so that a backup capacitor can be added to increase the RTC autonomy.

2.10.5 Data/fax transmission

The **Telit GC864-DUAL** support:

- GPRS Class 10, MS Class B
- CSD up to 14.4 Kbps
- Fax service, Class 1 Group 3

2.10.6 Local security management

The local security management can be done with the lock of Subscriber Identity module (SIM), and security code request at power-up.

2.10.7 Call control

The call cost control function is supported.

2.10.8 Phonebook

This function allows the storing of the telephone numbers in SIM memory. The capability depends on SIM version and embedded memory.



2.10.9 Characters management

The **Telit GC864-DUAL** supports the IRA characters set (International Reference Alphabet), in TEXT and PDU mode.

2.10.10 SIM related functions

Activation and deactivation of the numbers stored in phone book FDN, ADN and PINs are supported. Extension at the PIN2 for the PUK2 insertion capability for lock condition is supported.

2.10.11 Call status indication

The call status indication by AT commands is supported.

2.10.12 Automatic answer (Voice, Data or FAX)

After a specified number of rings, the module will automatically answer with a beep. The user can set the number of rings by means of the command `ATS0=<n>`.

2.10.13 Supplementary services (SS)

The following supplementary services are supported:

- Call Barring,
- Call Forwarding,
- Calling Line Identification Presentation (CLIP),
- Calling Line Identification Restriction (CLIR),
- Call Waiting, other party call Waiting Indication,
- Call Hold, other party Hold / Retrieved Indication,
- Closed User Group supplementary service (CUG),
- Advice of Charge,
- Unstructured SS Mobile Originated (MO)



2.10.14 Acoustic signaling

The acoustic signaling of the **GC864-DUAL** on the selected acoustic device are the following:

- Call waiting;
- Ringing tone;
- SMS received tone;
- Busy tone;
- Power on/off tone;
- Off Hook dial tone;
- Congestion tone;
- Connected tone;
- Call dropped;
- No service tone;
- Alarm tone.

2.10.15 Buzzer output

The General Purpose I/O pin GPIO7 can be configured to output the BUZZER output signal, with only an external MOSFET/transistor and a diode a Buzzer can be directly driven.

The ringing tone and the other signaling tones can be redirected to this Buzzer output with a specific AT command.

2.10.16 RF Transmission Monitor

As alternate function of the GPIO5, the **GC864-DUAL** provides the RF transmission monitor. When the alternate function is activated, the pin of GPIO5 changes to HIGH every time the module transmits an RF signal and remains HIGH for the duration of the transmission sequence, i.e. it does not change with every GSM signal burst.

2.11 Logic level specifications

Where not specifically stated, all the interface circuits work at 2.8V CMOS logic levels. To get more detailed information about the logic level specifications used in the **Telit GC864-DUAL** interface circuits please consult the Hardware User Guide.



2.11.1 Reset signal

Signal	Function	I/O	GC864-DUAL pin
RESET	Phone reset	I/O	54

RESET is used to reset the **GC864-DUAL**. Whenever this signal is pulled low, the **GC864-DUAL** is reset. When the device is reset it stops any operation and after the release of the reset it is unconditionally rebooted, without doing any detach operation from the network where it is registered. This behavior is not like a proper shut down because any GSM device is requested to issue a detach request on turn off. For this reason the Reset signal must not be used to normally shutting down the device, but only as an emergency exit in the rare case the device remains stuck waiting for some network response. The RESET is internally controlled on start-up to achieve always a proper power-on reset sequence, so there's no need to control this pin on start-up. It may only be used to reset a device already on that is not responding to any command.

NOTE: do not use this signal to power off the **Telit GC864-DUAL module**. Use the ON_OFF* signal to perform this function or the AT#SHDN command.



2.12 Audio levels specifications

The audio of the **GC864-DUAL** is organized into two main paths:

- internal path (called also MT)
- external path (called also HF)

These two paths are meant respectively for handset and headset/hands-free use. The **GC864-DUAL** has a built in echo canceller and a noise suppressor, tuned separately for the two audio paths; for the internal path the echo canceller parameters are suited to cancel the echo generated by a handset, while for the external audio path they are suited for a hands-free use. For more information on the audio refer to the Hardware User Guide.



2.13 Converters

2.13.1 ADC Converter

The on board ADCs are 11-bit converter. They are able to read a voltage level in the range of 0÷2 volts applied on the ADC pin input, store and convert it into 11 bit word.

	Min	Max	Units
Input Voltage range	0	2	Volt
AD conversion	-	11	bits
Resolution	-	< 1	mV
Sampling rate	1 (idle)	60 (on traffic)	sec

2.13.2 DAC Converter

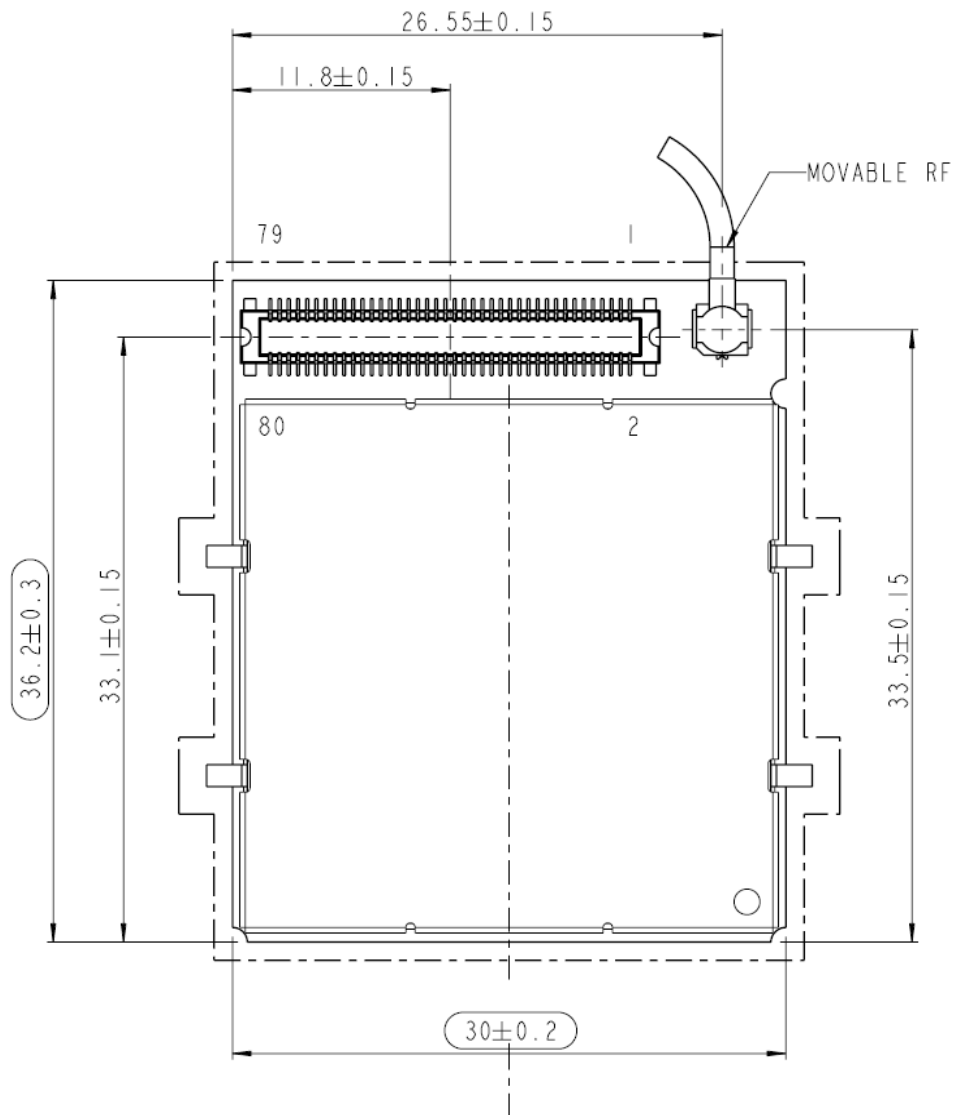
The on board DAC is a 10-bit converter, able to generate an analogue value based a specific input in the range from 0 up to 1023. However, an external low-pass filter is necessary. See the Hardware User Guide for the details.

	Min	Max	Units
Voltage range (filtered)	0	2,6	Volt
Range	0	1023	Steps



2.14 Mounting the GC864-DUAL on your board

The position of the Molex board to board connector and the pin 1 are shown in the following picture.

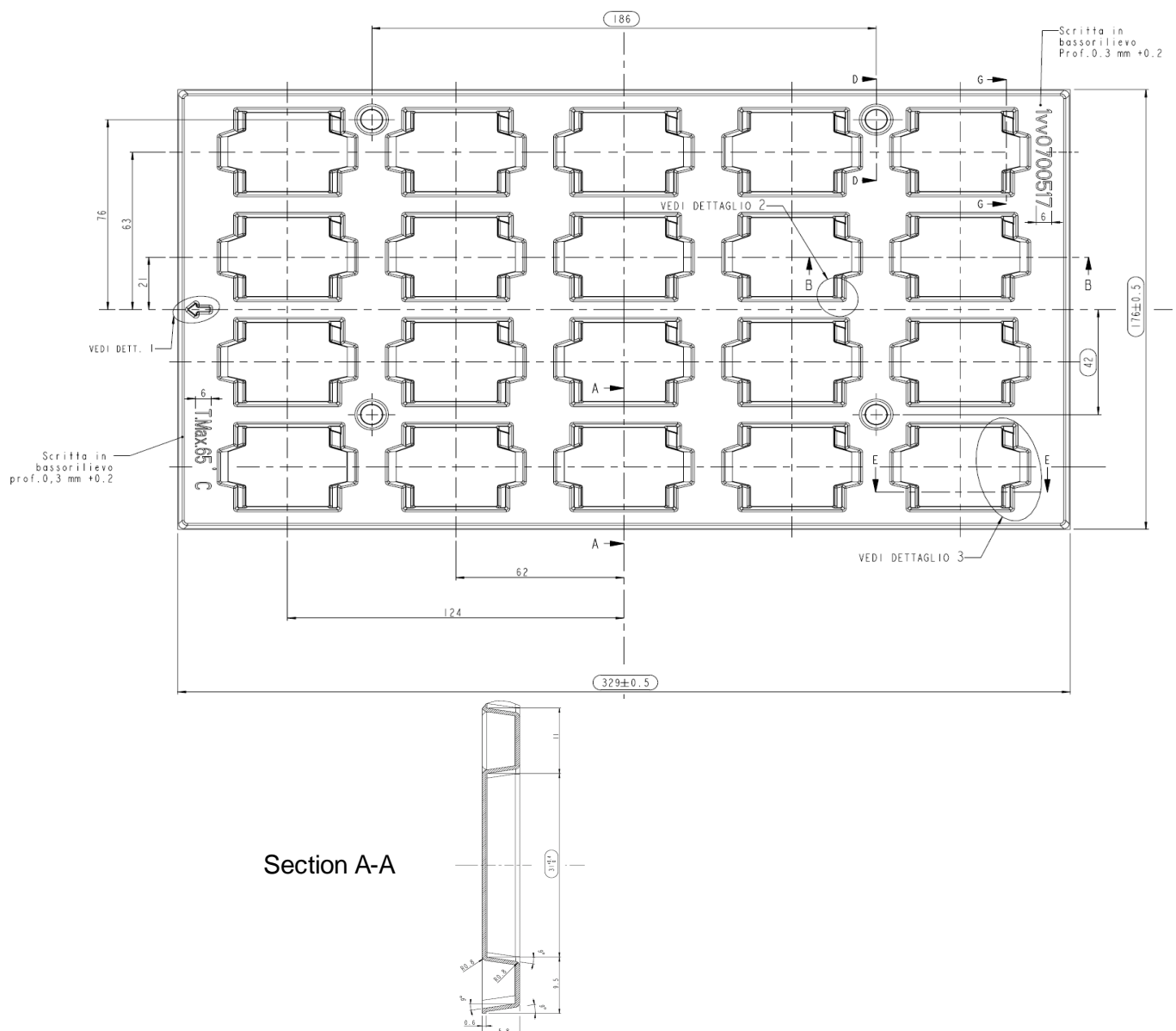


NOTE: metal tabs present on GC864-DUAL should be connected to GND



2.15 Packing system

The **Telit GC864-DUAL** is packaged on trays of 20 pieces each.



The size of the tray is: 329 x 176mm

NOTE: These trays can withstand at the maximum temperature of 65°C.

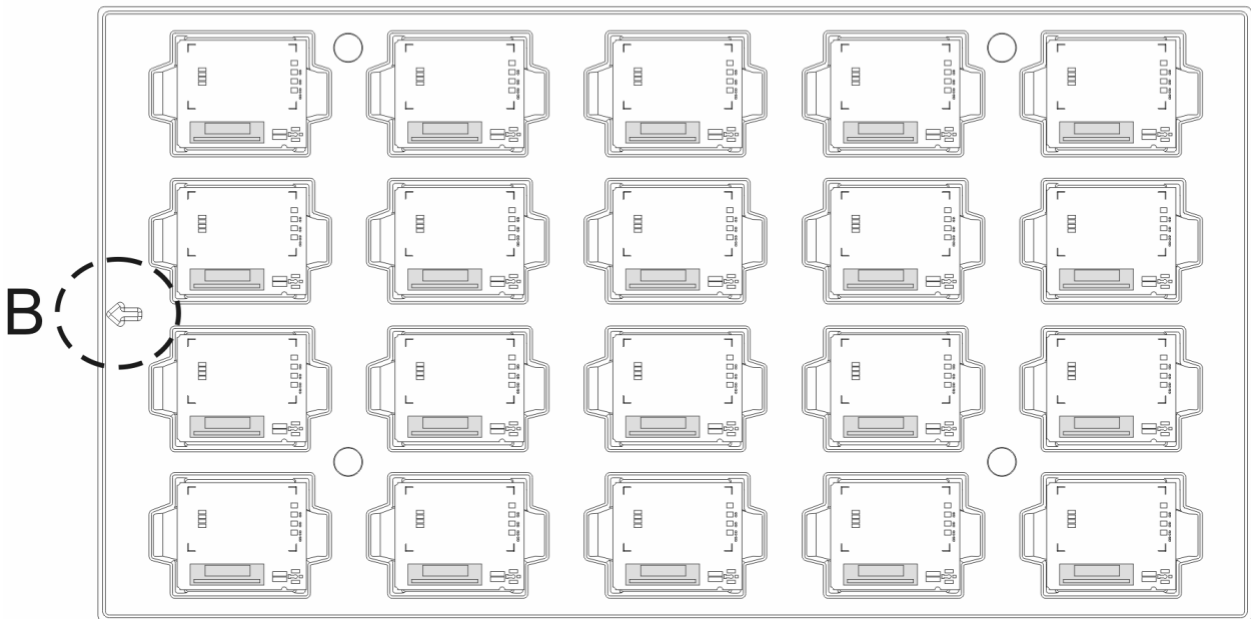
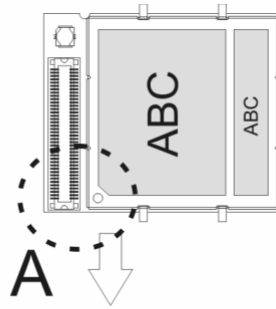


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The label on the module is oriented as shown in A.

The modules are placed in the tray up side down as shown in figure.

The tray is oriented toward left as shown in B.



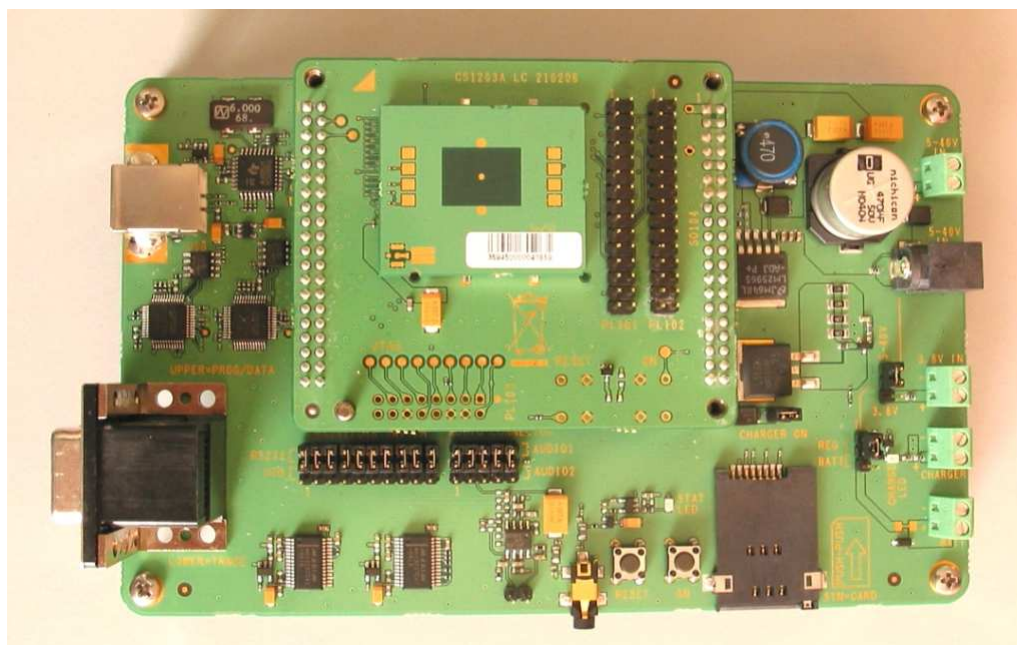
3 Evaluation Kit

In order to assist you in the development of your **Telit GC864-DUAL module** based application, Telit can supply the **EVK2 Evaluation Kit** with appropriate power supply, SIM card housing, RS 232 serial port level translator, direct UART connection, Handset, Headset and Hands-free (car kit) audio, antenna. The **EVK2** provides a fully functional solution for a complete data/phone application.

The standard serial RS232 9 pin connector placed on the **Evaluation Kit** allows the connection of the **EVK2** system with a PC or other DTE.

The development of the applications utilizing the **Telit GC864-DUAL module** must present a proper design of all the interfaces towards and from the module (e.g. power supply, audio paths, level translators), otherwise a decrease in the performances will be introduced or, in the worst case, a wrong design can even lead to an operating failure of the module.

In order to assist the hardware designer in his project phase, the **EVK2** board presents a series of different solutions, which will cover the most common design requirements on the market, and which can be easily integrated in the OEM design as building blocks or can be taken as starting points to develop a specific one.



GC864-DUAL Evaluation Kit

For a detailed description of the **Telit Evaluation Kit** refer to the documentation provided with the Telit **GC864-DUAL** Hardware User Guide and EVK2 User Manual.



4 Software Features

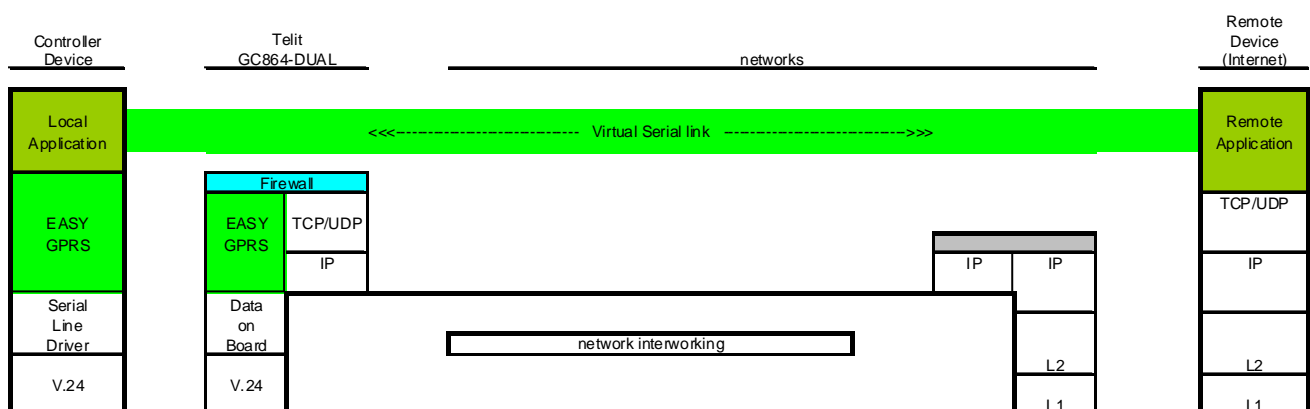
4.1 Enhanced Easy GPRS Extension

4.1.1 Overview

The Easy GPRS feature allows the **Telit GC864-DUAL** user to contact a device in internet and establish with it a raw data flow over the GPRS and Internet networks.

This feature can be seen as a way to obtain a "virtual" serial connection between the Application Software on the Internet machine involved and the controller of the **Telit GC864-DUAL** module, regardless of all the software stacks underlying.

An example of the protocol stack involved in the devices is reported:



This particular implementation allows to the devices interfacing to the **Telit GC864-DUAL** module the use of the GPRS and Internet packet service without the need to have an internal TCP/IP stack since this function is embedded inside the module.

Easy GPRS overcomes some of the known limitations of the previous implementation and implements some new features such as:

- Keep the GPRS context active even after the closing of a socket, allowing the application to keep the same IP address;
- Also Mobile terminated (incoming) connections can be made, now it is possible to receive incoming TCP connection requests;



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- A new internal firewall has been implemented in order to guarantee a certain level of security on internet applications.

4.1.2 Easy GPRS definition

The Easy GPRS feature provides a way to replace the need of an Internet TCP/IP stack at the terminal equipment side. The steps that will be required to obtain a virtual serial connection (that is actually a socket) to the Internet peer are:

- configuring the GPRS Access
- configuring the embedded TCP/IP stack behavior
- defining the Internet Peer to be contacted
- request the GPRS and socket connections to be opened (host is connected)
- exchange raw data
- close the socket and GPRS context

All these steps are achieved through AT commands.

As for common modem interface, two logical status are involved: command mode and data traffic mode.

- In Command Mode (CM), some AT commands are provided to configure the Data Module Internet stack and to start up the data traffic.
- In data traffic mode (Socket Mode, SKTM), the client can send/receive a raw data stream which will be encapsulated in the previously configured TCP / IP packets which will be sent to the other side of the network and vice versa. Control plane of ongoing socket connection is deployed internally to the module.

For more detailed information regarding GPRS please consult Easy GPRS User Guide and AT Commands Reference Guide.

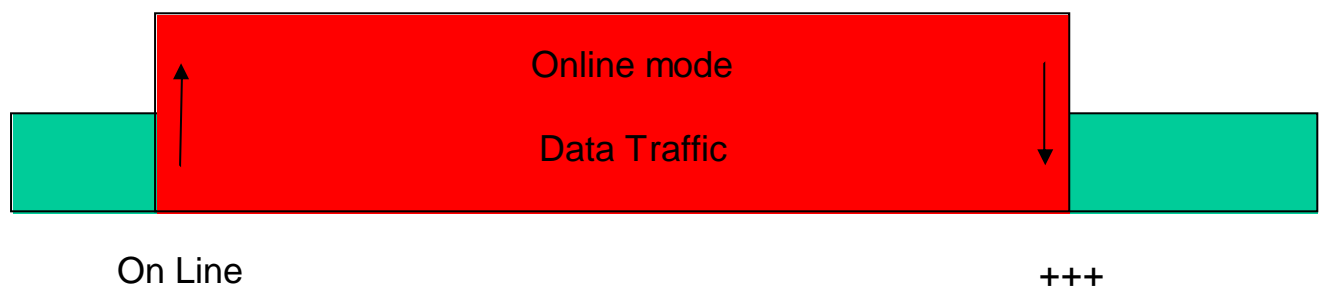


4.2 Multisocket

New functionality of the Telit modules, multisocket is an extension of Telit Easy GPRS feature, which allows the user to have two contexts activated (that means two different IP address), more than one socket connection (with a maximum of 6) and simultaneous FTP client service.

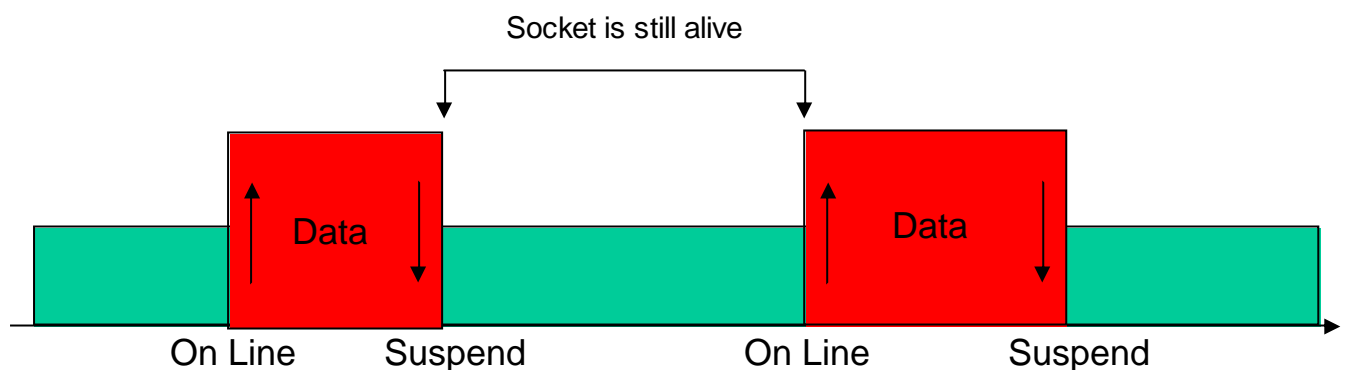
The basic idea of multisocket is the possibility of suspend a socket connection with the escape sequence +++.

With IP Easy we can use a SKTD to open a socket connection and go online. After online activities we use +++ sequence to close the connection (see the figure below).



Where the green part represents the module command mode while the red part is the online mode.

Now, the online mode can be suspended with the escape sequence by using the multisocket feature. During suspend mode the data received by the socket will be buffered. These data will be displayed after socket resumption, as shown in the figure below:



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This new feature allows the user to switch between online mode and command mode without closing the connection and eventually opening another socket (or resuming the suspended one) or FTP connection.

Another feature is the possibility to associate any socket connection to a specific context, this means that we can use different IP addresses for the connections (max 2). Socket identifier is called Connection Id (selects which socket we want to use from 1 up to 6) and every Connection Id is associated to a context.

For more detailed information please consult Multisocket User Guide.



4.3 Jammed Detect & Report Extension

4.3.1 Overview

The Jammed Detect & Report feature allows a [Telit GC864-DUAL](#) to detect the presence of a disturbing device such as a Communication Jammer and give indication to the user and/or send a report of that to the network.

This feature can be very important in alarm, security and safety applications that rely on the module for the communications. In these applications, the presence of a Jammer device can compromise the whole system reliability and functionality and therefore shall be recognized and reported either to the local system for countermeasure actions or to the network providing remote actions.

An example scenario could be an intrusion detection system that uses the module for sending the alarm indication for example with an SMS to the system owner, and a thief income using a Jammer to prevent any communication between the GSM module and the network.

In such a case, the module detects the Jammer presence even before the break in and can trigger an alarm siren, other communication devices (PSTN modem) or directly report this condition to the network that can provide further security services for example sending SMS to the owner or police. Obviously this last service depends also from network infrastructure support and it may not be supported by some networks.



4.4 CMUX

CMUX (Converter-Multiplexer) is a multiplexing protocol implemented in the Telit module that can be used to send any data, SMS, fax, TCP data.

4.4.1 Product architecture

The Multiplexer mode enables one serial interface to transmit data to four different customer applications. This is achieved by providing four virtual channels using a Multiplexer (Mux).

This is especially advantageous when a fax/data/GPRS call is ongoing. Using the Multiplexer features, e.g. controlling the module or using the SMS service can be done via the additional channels without disturbing the data flow; access to the second UART is not necessary.

Furthermore, several accesses to the module can be created with the Multiplexer. This is of great advantage when several independent electronic devices or interfaces are used.

To access the three virtual interfaces, both the GSM engine and the customer application must contain Mux components, which communicate over the multiplexer protocol.

In Multiplexer mode, AT commands and data are encapsulated into packets. Each packet has channel identification and may vary in length.

4.4.2 Implementation feature and limitation

- 7.10 CMUX Basic Option used
- CMUX implementation support four full DLCI (Serial Port)
- CMUX can operate only at Fixed rate, if AT+CMUX is sent with IPR=0 an Error is returned, with a maximum rate of 115200
- Every instance has its own user profile storage in NVM
- Independent setting of unsolicited message.
- Every Instance has its own independent flow control.

NOTE: More details about the Multiplexer mode are available in the Cmux User Guide.



4.5 SAP: SIM Access Profile

4.5.1 Product architecture

The SAP feature allows the module to use the SIM of a remote SIM Server. This feature is implemented using special AT Command on a Virtual circuit of the CMUX interface.

4.5.2 Implementation feature

- SAP is based on 7.10 CMUX Basic Option used
- Only SAP Client features
- Logic Hardware flow control is recommended on the Virtual instance selected for the SAP command.

4.5.3 Remote SIM Message Command Description

The module sends request commands to the client application through a binary message that is crowned in the CMUX message. The client application shall extract the message and send it to the SAP server, through the appropriate protocols (e.g. by RFCOMM, that is the Bluetooth serial port emulation entity).

The client application shall extract all the messages sent by SAP server and put them in the CMUX message, to send to the module.

The module satisfies the following feature requirements:

- Connection management
- Transfer APDU
- Transfer ATR
- Power SIM on
- Report Status
- Error Handling

Every feature needs some procedures support:

Feature	Procedure
Connection Management	Connect
	Report Status



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	Transfer ATR
	Disconnection Initiated by the Client
	Disconnection Initiated by the Server
Transfer APDU	Transfer APDU
Transfer ATR	Transfer ATR
Power SIM on	Power SIM on
	Transfer ATR
Report Status	Report Status
Error Handling	Error Response

Report Status, Disconnection Initiated by the Server and Error Response are independent messages sent by server. The other procedures consist of couples of messages, started by client.

NOTE: More details about the SAP are available in the SAP User Guide.



5 AT Commands

The **Telit GC864-DUAL module** can be driven via the serial interface using the standard AT commands¹.

The **Telit GC864-DUAL module** is compliant with:

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. ETSI GSM 07.07 specific AT command and GPRS specific commands.
3. ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)
4. FAX Class 1 compatible commands

Moreover the **Telit GC864-DUAL module** supports also Telit proprietary AT commands for special purposes.

For a more information about AT commands supported by GC864-DUAL module please refer to document AT Commands Reference Guide, code 80000ST10025a.

¹ The AT is an ATTENTION command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.



6 SAFETY RECOMMENDATIONS

READ CAREFULLY

Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas:

- ☐ Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc
- ☐ Where there is risk of explosion such as gasoline stations, oil refineries, etc

It is responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity.

We recommend following the instructions of the hardware user guides for a correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conforming to the security and fire prevention regulations.

The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible of the functioning of the final product; therefore, care has to be taken to the external components of the module, as well as of any project or installation issue, because the risk of disturbing the GSM network or external devices or having impact on the security. Should there be any doubt, please refer to the technical documentation and the regulations in force.

Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case of this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The European Community provides some Directives for the electronic equipments introduced on the market. All the relevant information's are available on the European Community website:

<http://europa.eu.int/comm/enterprise/rtte/dir99-5.htm>

The text of the Directive 99/05 regarding telecommunication equipments is available, while the applicable Directives (Low Voltage and EMC) are available at:

http://europa.eu.int/comm/enterprise/electr_equipment/index_en.htm



7 GC864-DUAL Technical Support

Telit's technical support to **GC864-DUAL** wireless modems customers consists in:

- Technical documentation: available for download into the Website www.telit.com >Products >Modules > selected model.
- Engineering support: accessible via E-Mail service with 48h replies assured under normal conditions.



8 List of acronyms

ACM	Accumulated Call Meter
ASCII	American Standard Code for Information Interchange
AT	Attention commands
CB	Cell Broadcast
CBS	Cell Broadcasting Service
CCM	Call Control Meter
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CMOS	Complementary Metal-Oxide Semiconductor
CR	Carriage Return
CSD	Circuit Switched Data
CTS	Clear To Send
DAI	Digital Audio Interface
DCD	Data Carrier Detected
DCE	Data Communications Equipment
DRX	Data Receive
DSR	Data Set Ready
DTA	Data Terminal Adaptor
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
EMC	Electromagnetic Compatibility
ETSI	European Telecommunications Equipment Institute
FTA	Full Type Approval (ETSI)
GPRS	General Radio Packet Service
GSM	Global System for Mobile communication
HF	Hands Free
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IRA	International Reference Alphabet
ITU	International Telecommunications Union
IWF	Inter-Working Function
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LF	Linefeed
ME	Mobile Equipment
MMI	Man Machine Interface
MO	Mobile Originated
MS	Mobile Station



Telit GC864-DUAL Product Description

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MT	Mobile Terminated
OEM	Other Equipment Manufacturer
PB	Phone Book
PDU	Protocol Data Unit
PH	Packet Handler
PIN	Personal Identity Number
PLMN	Public Land Mobile Network
PUCT	Price per Unit Currency Table
PUK	PIN Unblocking Code
RACH	Random Access Channel
RLP	Radio Link Protocol
RMS	Root Mean Square
RTS	Ready To Send
RI	Ring Indicator
SCA	Service Center Address
SIM	Subscriber Identity Module
SMD	Surface Mounted Device
SMS	Short Message Service
SMSC	Short Message Service Center
SS	Supplementary Service
TIA	Telecommunications Industry Association
UDUB	User Determined User Busy
USSD	Unstructured Supplementary Service Data



9 Document Change Log

Revision	Date	Changes
ISSUE #0	20/06/2007	First issue

